

SEQUENCE LISTING

<110> F. Hoffmann-la Roche AG
 <120> Use of Acid-Stable Subtilisin Proteases in Animal Feed
 <130> 6092.204-wo
 <140> DK 2000 00200
 <141> 2000-02-08
 <160> 7
 <170> PatentIn version 3.0
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 <212> PRT
 <213> Acremonium chrysogenum ATCC 48272
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His Arg Gln Pro Gly Ser Thr Ser Tyr Ile Tyr
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Trp

<210> 3
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His

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His Arg Ser Arg Gly Ser
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 <213> Bacillus sp. NCIMB 40484
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[illegible]

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	-25						-20								-15
Leu	Phe	Pro	Ala	Phe	Gly	Gly	Ser	Ser	Leu	Ala	Lys	Glu	Ala	Pro	Lys
	-10					-5				-1	1				5
Pro	Phe	Gln	Pro	Ile	Asn	Lys	Thr	Leu	Asp	Lys	Gly	Ala	Phe	Glu	Ser
				10					15					20	
Gly	Glu	Val	Ile	Val	Lys	Phe	Lys	Asp	Gly	Val	Ser	Lys	Lys	Ala	Gln
			25					30					35		
Gly	Ser	Ala	Leu	Asn	Lys	Ala	Glu	Ala	Asn	Glu	Gln	Lys	Ala	Ser	Ala
		40					45					50			
Lys	Asp	Pro	Phe	Gln	Val	Leu	Glu	Val	Ala	Asp	Val	Asp	Gln	Ala	Val
	55					60					65				
Lys	Ala	Leu	Glu	Asn	Asn	Pro	Asn	Val	Glu	Tyr	Ala	Glu	Pro	Asn	Tyr
70					75					80					85
Thr	Phe	Gln	Ala	Thr	Trp	Ser	Pro	Asn	Asp	Pro	Tyr	Tyr	Ser	Ala	Tyr
				90					95					100	
Gln	Tyr	Gly	Pro	Gln	Asn	Thr	Ser	Thr	Pro	Ala	Ala	Trp	Asp	Val	Thr
			105					110					115		
Arg	Gly	Ser	Ser	Thr	Gln	Thr	Val	Ala	Val	Leu	Asp	Ser	Gly	Val	Asp
		120					125					130			
Tyr	Asn	His	Pro	Asp	Leu	Ala	Arg	Lys	Val	Ile	Lys	Gly	Tyr	Asp	Phe
	135					140					145				
Ile	Asp	Arg	Asp	Asn	Asn	Pro	Met	Asp	Leu	Asn	Gly	His	Gly	Thr	His
150					155					160					165
Val	Ala	Gly	Thr	Val	Ala	Ala	Asp	Thr	Asn	Asn	Gly	Ile	Gly	Val	Ala
				170					175					180	
Gly	Met	Ala	Pro	Asp	Thr	Lys	Ile	Leu	Ala	Val	Arg	Val	Leu	Asp	Ala
			185					190					195		
Asn	Gly	Ser	Gly	Ser	Leu	Asp	Ser	Ile	Ala	Ser	Gly	Ile	Arg	Tyr	Ala
		200					205					210			
Ala	Asp	Gln	Gly	Ala	Lys	Val	Leu	Asn	Leu	Ser	Leu	Gly	Cys	Glu	Cys
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Asn	Ser	Thr	Thr	Leu	Lys	Ser	Ala	Val	Asp	Tyr	Ala	Trp	Asn	Lys	Gly
230					235					240					245

Ala Ser His Pro Glu Phe Glu Gly Arg Ala Ser Gln Ile Lys Ser Phe
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 Ile Ser Gly Gln Asn Thr Asp Gly Asn Gly His Gly Thr His Cys Ala
 145 150 155 160
 Gly Thr Ile Gly Ser Lys Thr Tyr Gly Val Ala Lys Lys Thr Lys Ile
 165 170 175
 Tyr Gly Val Lys Val Leu Asp Asn Ser Gly Ser Gly Ser Tyr Ser Gly
 180 185 190
 Ile Ile Ser Gly Met Asp Phe Ala Val Gln Asp Ser Lys Ser Arg Ser
 195 200 205
 Cys Pro Lys Gly Val Val Ala Asn Met Ser Leu Gly Gly Gly Lys Ala
 210 215 220
 Gln Ser Val Asn Asp Gly Ala Ala Ala Met Ile Arg Ala Gly Val Phe
 225 230 235 240
 Leu Ala Val Ala Ala Gly Asn Asp Asn Ala Asn Ala Ala Asn Tyr Ser
 245 250 255
 Pro Ala Ser Glu Pro Thr Val Cys Thr Val Gly Ala Thr Thr Ser Ser
 260 265 270
 Asp Ala Arg Ser Ser Phe Ser Asn Tyr Gly Asn Leu Val Asp Ile Phe
 275 280 285
 Ala Pro Gly Ser Asn Ile Leu Ser Thr Trp Ile Gly Gly Thr Thr Asn
 290 295 300
 Thr Ile Ser Gly Thr Ser Met Ala Thr Pro His Ile Val Gly Leu Gly
 305 310 315 320
 Ala Tyr Leu Ala Gly Leu Glu Gly Phe Pro Gly Ala Gln Ala Leu Cys
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 <213> Bacillus sp. THS-1001
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Asn Gln Val Thr Pro Trp Gly Ile Thr Arg Val Gln Ala Pro Thr Ala
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 Trp Thr Arg Gly Tyr Thr Gly Thr Gly Val Arg Val Ala Val Leu Asp
 20 25 30
 Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Val Ser
 35 40 45

Phe 50	Val	Pro	Gly	Glu	Pro	Ser 55	Tyr	Gln	Asp	Gly	Asn 60	Gly	His	Gly	Thr
His 65	Val	Ala	Gly	Thr	Ile 70	Ala	Ala	Leu	Asn	Asn 75	Ser	Ile	Gly	Val	Val 80
Gly	Val	Ala	Pro	Asn 85	Ala	Glu	Leu	Tyr	Ala 90	Val	Lys	Val	Leu	Gly 95	Ala
Asn	Gly	Ser	Gly 100	Ser	Val	Ser	Ser	Ile 105	Ala	Gln	Gly	Leu	Gln 110	Trp	Thr
Ala	Gln	Asn 115	Asn	Ile	His	Val	Ala 120	Asn	Leu	Ser	Leu	Gly 125	Ser	Pro	Val
Gly	Ser 130	Gln	Thr	Leu	Glu 135	Leu	Ala	Val	Asn	Gln 140	Ala	Thr	Asn	Ala	Gly
Val 145	Leu	Val	Val	Ala	Ala 150	Thr	Gly	Asn	Asn	Gly 155	Ser	Gly	Thr	Val	Ser 160
Tyr	Pro	Ala	Arg	Tyr 165	Ala	Asn	Ala	Leu	Ala 170	Val	Gly	Ala	Thr	Asp 175	Gln
Asn	Asn	Asn	Arg 180	Ala	Ser	Phe	Ser	Gln 185	Tyr	Gly	Thr	Gly	Leu 190	Asn	Ile
Val	Ala	Pro 195	Gly	Val	Gly	Ile	Gln 200	Ser	Thr	Tyr	Pro	Gly 205	Asn	Arg	Tyr
Ala	Ser 210	Leu	Ser	Gly	Thr	Ser 215	Met	Ala	Thr	Pro	His 220	Val	Ala	Gly	Val
Ala 225	Ala	Leu	Val	Lys	Gln 230	Lys	Asn	Pro	Ser	Trp 235	Ser	Asn	Thr	Gln	Ile 240
Arg	Gln	His	Leu	Thr 245	Ser	Thr	Ala	Thr	Ser 250	Leu	Gly	Asn	Ser	Asn 255	Gln
Phe	Gly	Ser	Gly 260	Leu	Val	Asn	Ala 265	Glu	Ala	Ala	Thr	Arg			

7. The animal feed additive of claim 6, wherein the amount of the protease corresponds to an intended addition of 0.01-200 mg protease protein per kg feed.

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8. The animal feed additive of any one of claims 6-7, which further comprises phytase, xylanase, galactanase, and/or beta-glucanase.

10 9. An animal feed composition having a crude protein content of 50-800 g/kg and comprising at least one acid-stable protease, wherein the protease

(i) is of the subtilisin family; and/or

(ii) has less than 10% residual activity when inhibited
15 with SSI.

10. The animal feed composition of claim 9, wherein the amount of the protease is 0.01-200 mg protease protein per kg feed.

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11. A method for the treatment of vegetable proteins, comprising the step of adding at least one acid-stable protease to at least one vegetable protein or protein source, wherein the protease

25 (i) is of the subtilisin family; and/or

(ii) has less than 10% residual activity when inhibited
with SSI.

12. The method of claim 11, wherein soybean is included
30 amongst the at least one vegetable protein source.